

Project Deliverable H

-Economics Report-

Group A3

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Cost classification and estimation

The following table shows a list of our companies cost, cos classification, and an estimation of an annual cost. A second table follows providing a justification for each of the costs.

Table 1: Helpo Cost Classifications		
Cost Description	Cost Type	Amount (yearly)
Production Materials	Material, Variable, Direct	\$10 per keyboard
Manufacturing	Labour, Semi-Variable, Direct	\$86,400
Shipping	Expense, Semi-Variable, Direct	\$10 per keyboard
Salaries	Labour, Fixed, Direct	\$126,240
Overhead	Expenses, Fixed, Indirect	\$1500
Rent	Expenses, Fixed, Indirect	\$10,800
Utilities	Expenses, Semi-Variable, Indirect	~\$3,600
Marketing	Expenses, Variable, Indirect	\$1000
Research and Development	Expenses, Variable, Indirect	\$500
Tax	Expenses, Variable, Taxation cost (other)	Variable

Table 2: Helpo Cost Justifications	
Cost Description	Cost Justification
Production Materials	In bulk, materials for each keyboard come out to roughly \$10 each
Manufacturing	3 employees working \$15 an hour, 40 hours a week, 48 weeks a year
Shipping	Estimating high for around the world shipping, ~\$10 per board
Salaries	2 full time IT support and dev team working \$25 an hour, 40 hours a week, 48 weeks a year (\$96,000) and 3 interns working \$14 an hour, 15 hours a week, 48 weeks a year (\$30,240)
Overhead	Rough estimate for office supplies. In first year add \$5000 for startup costs (printer, computer, soldering iron, etc)

Rent	As a small company, we can rent cheaper. \$900 a month
Utilities	Smaller building = less utilities but manufacturing = more electricity. Rough estimate \$300 a month
Marketing	Small company focused on youtube advertisements, not mainstream media and posters. This is extremely variable
Research and Development	This is a budget the full time team has to spend on technology or rights to improve the software. Very variable and bound to increase.
Tax	Variable based on the company's final income. Should be low due to our "barely break even" mentality to try and keep costs low.

Manufacturing costs are one of two main areas of focus for Helpeo, Inc. Part of our product is the construction of a keyboard that a customer can take, customize, and use when creating their artwork. There are standard costs associated with this, including the cost of production materials to make PCBs, the manufacturing cost of assembling the PCBs, the rent for whatever factory these are being built in, their utilities, their overhead costs, their tax costs, and their shipping costs. One of the main differences between current design and one for mass production is the differentiation between through hole and surface mount. The PCB would be redesigned to be surface mount reducing the cost of assembly labour and the overall cost of components. As a small business, we are not partnering to sell this through a larger distributor like Best-Buy or Walmart, but are instead going to be in charge of our own shipping costs.

The other main area of focus for our product is the tech side; the voice activation system and UI. To keep these running, have customer support available, and continue improving, there are some costs. Included in this is IT salaries, rent for this building, their own overhead and utilities, and their own tax. Additionally, this group would also work with marketing and with research and development to continue to push the product out there and continue to improve it. Our business plan is not necessarily to make money, but instead to improve the lives of the disabled artists who our product can benefit. Because of this, even after considering all of these factors, the product would not be priced any higher than it has to be for us to break even. A small margin (within \$20,000) would be considered acceptable for the company's profit. This could be used as an emergency fund, and would be an indication that we could invest in more resources or reduce customer prices.

Income statements for three years

Table 3, Table 4, and Table 5 display the income statements for Helpeo's first 3 years of operation. Values for bank loans, interest, and tax have not been included here; these are to gain an understanding of operational expenses primarily. The following assumptions have been made for these income statements:

1. The 3-year period examined here is 2020, 2021, 2022
2. The material cost of the keyboards remained the same for all 3 years, at \$10/keyboard.

3. The cost of shipping for each keyboard is \$15, and will be recorded in the “Shipping Expense” section.
4. The software license for Helpo was consistently priced at a one-time fee of \$10/user.
5. Helpo, Inc. does not want to make any significant profit on the product, thus each income statement should produce only a small net income.
 - a. An acceptable range of profit is \$20,000 to account for any emergencies or unforeseen costs
6. Assume that the expenses for Overhead, Rent, Utilities, Marketing, and Research and Development remain the same for each year.

In Year 1, Helpo Inc. sold 3000 keyboards at \$35 each and 5000 user licenses. As a newly founded company it had a very small staff and so salaries were only \$60,000. Manufacturing was done by one hourly employee, for a total cost of \$28,800. In this first year, Helpo’s net income was negative, which is common in early years of start-ups.

In Year 2, Helpo sold 6000 keyboards and 10,000 user licenses. To help with the loss from Year 1, the price of each keyboard was increased to \$40. Staff size increased as well, which was reflected in a Salaries expense of \$90,000. Another manufacturing worker was hired due to the increased production demand, which brought manufacturing costs to \$57,600.

In Year 3, Helpo sold 8,000 keyboards and 11,000 user licenses. The keyboard price was maintained at \$40. Considering the profit of the previous year and the increased demand, staff size was increased to accommodate 3 interns, resulting in a total cost of \$126,240 for Salaries. A third manufacturing worker was hired, resulting in a total cost of \$86,400 for Manufacturing. The Net Income this year was -\$40, which is almost a perfect break-even. By selling a few more keyboards, Helpo would directly meet its goal of providing quality products to the client with negligible personal profit. The exact number to break even will be examined in the NPV analysis for break-even point (next section).

Table 3: Income statement for Year 1

Helpo Inc. Income statement For the year ending December 31, 2020		
Revenues		
Sales		\$155,000
Cost of goods sold		<u>\$30,000</u>
Gross profit on sales		\$125,000
Expenses		
Operating Expenses		
	Shipping Expense	\$45,000
	Salaries Expense	\$60,000
	Manufacturing Expense	\$28,800
	Rent Expense	\$10,800
	Utilities Expense	\$3,600
	Overhead Expense	\$1,500
	Marketing Expense	\$1,000
	Research and Development Expense	\$500
	Total operating expenses	\$151,200
Operating income		<u>\$(26,200)</u>
Net Income		\$(26,200)

Table 4: Income statement for Year 2

Helpo Inc. Income statement For the year ending December 31, 2021		
Revenues		
Sales		\$340,000
Cost of goods sold		<u>\$60,000</u>
Gross profit on sales		\$280,000
Expenses		
Operating Expenses		
	Shipping Expense	\$90,000
	Salaries Expense	\$90,000
	Manufacturing Expense	\$57,600
	Rent Expense	\$10,800
	Utilities Expense	\$3,600
	Overhead Expense	\$1,500
	Marketing Expense	\$1,000
	Research and Development Expense	<u>\$500</u>
	Total operating expenses	\$255,000
Operating income		<u>\$25,000</u>
Net Income		\$25,000

Table 5: Income statement for Year 3

Helpo Inc. Income statement For the year ending December 31, 2022		
Revenues		
Sales		\$430,000
Cost of goods sold		<u>\$80,000</u>
Gross profit on sales		\$350,000
Expenses		
Operating Expenses		
	Shipping Expenses	\$120,000
	Salaries Expense	\$126,240
	Manufacturing Expense	\$86,400
	Rent Expense	\$10,800
	Utilities Expense	\$3,600
	Overhead Expense	\$1,500
	Marketing Expense	\$1,000
	Research and Development Expense	<u>\$500</u>
	Total operating expenses	\$350,040
Operating income		<u>\$(40)</u>
Net Income		\$(40)

NPV analysis for break-even point

The information for the cash flows shown in Tables 6, 7, and 8 is taken from the income statements for Year 1, Year 2, and Year 3.

Year 1

$$PV = (-26\,000)/(1+0.0545)^1 = -\$24,656.24$$

Year 2

$$PV = (25\,000)/(1 + 0.0545)^2 = \$22,482.62$$

Year 3:

$$PV = (-40)/(1+ 0.0545)^3 = -\$34.11$$

$$NPV = -\$24,656.24 + \$22,482.62 - \$34.11 - \$100 = \mathbf{-\$2,307.73}$$

Year	Future Value	Factor	Present Value
	A	B	A/B
0			(100)
1	-\$26,000	(1 + 0.0545)	-\$24,656.24
2	\$25,000	(1 + 0.0545) ²	\$22,482.62
3	-\$40	(1 + 0.0545) ³	-\$34.11
Net Present Value			-\$2,307.73

Table 6: Cash flow for Year 1			
Helpo Inc. Cash Flow For the year ending December 31, 2020			
Cash In		Cash Out	
Sales	\$155,000	Salaries	\$60,000
		Shipping	\$45,000
		Costs of Goods Sold	\$30,000
		Manufacturing	\$28,800

		Rent	\$10,000
		Utilities	\$3,600
		Overhead	\$1,500
		Marketing	\$1,000
		R & D	\$500
Total Cash In	\$155,000	Total Cash Out	\$181 200
Net Cash Flow = (total cash in - total cash out) = \$155,000 - \$181,200 = -\$26,200			

Break-Even point (units) = Fixed Costs ÷ (Sales price per unit – Variable costs per unit)

$$\$181\,200 \div (\$45 - \$35) = \underline{18\,120 \text{ units}}$$

Table 7: Cash Flow for Year 2			
Helpo Inc. Cash Flow For the year ending December 31, 2021			
Cash In		Cash Out	
Sales	\$340,000	Salaries	\$90,000
		Shipping	\$90,000
		Costs of Goods Sold	\$60,000
		Manufacturing	\$57,600
		Rent	\$10,800
		Utilities	\$3,600
		Overhead	\$1,500
		Marketing	\$1,000
		R & D	\$500
Total Cash In	\$340,000	Total Cash Out	\$315,000
Net Cash Flow = \$340,000 - \$315,000 = \$25 000			

Break-Even point (units) = Fixed Costs ÷ (Sales price per unit – Variable costs per unit)

$$\$315\,000 \div (\$55 - \$35) = \underline{15\,750 \text{ units}}$$

Table 8: Cash flow for Year 3			
Helpo Inc. Cash Flow For the year ending December 31, 2022			
Cash In		Cash Out	
Sales	\$430,000	Salaries	\$126,240
		Shipping	\$120,000
		Costs of Goods Sold	\$80,000
		Manufacturing	\$86,400
		Rent	\$10,800
		Utilities	\$3,600
		Overhead	\$1,500
		Marketing	\$1,000
		R & D	\$500
Total Cash In	\$430,000	Total Cash Out	\$430,040
Net Cash Flow = \$430,000 - \$430,040 = -\$40			

Break-Even point (units) = Fixed Costs ÷ (Sales price per unit – Variable costs per unit)

$$\$430\,040 \div (\$55 - \$35) = \underline{21\,502 \text{ units}}$$

Analysis

Before starting this analysis, it's important to note that, as a company, we are focusing on "barely breaking even". Our goal is to provide a greater social benefit and just make enough profit to continue running. With that in mind, currently speaking, our social bottom line is extremely positive, but our fiscal bottom line is in the red. Performing an NPV analysis exaggerates this negative value even more as we can see that some changes would have to be

made before launching this project. This could be done through the increase of prices, cutting back on personnel, or trying to reach a larger market. Another option would involve diversifying. Our logo is a very cute animal that could easily be marketbale. If we were to offer this as a stuffed animal, some shirts or hoodies, etc... and sell Helpo merchandise through a sustainably sourced clothing company, we can both raise publicity and profit. Additionally, we could partner with charities supporting disabled artists by giving them 50% of the income generated off of any merchandise sales. This would boost our financial profit, our social profit, and our environmental profit. Moving forward before fully launching this project, it would definitely be worth analyzing other options to ensure that we can keep an entirely green triple bottom line.

Assumptions

To begin we must assume that customers have already purchased licencing for Adobe Photoshop. This makes a 1-time purchase option more financially feasible than a subscription for most users since they will already have a monthly subscription due for Adobe. This software will collect the interest of a wide range of users including many beginners since Photoshop can be an overwhelming software to learn. The beginner users may not use our product for an extended period of time therefore the subscription model once again becomes a less profitable solution for us. The users that will use our product for an extended period of time will be those with disabilities preventing them from using Photoshops basic software, this is a much smaller group of individuals which will most likely not cover all operating costs if they are paying for a monthly subscription alone.

For the sake of calculating the Net Present Value (NPV), we will assume that the interest rate is 5.45%. This represents Canada's current prime interest rate, 2.45%, plus 3%.